

AIRCRAFT CONTROLS

United Technologies' Hamilton Standard division, Windsor Locks, Connecticut, manufactures a broad line of aerospace, automotive and industrial equipment. Among the company's key products are electronic jet engine controls and digital flight controls. The engine controls are computerized systems that meter fuel in precise amounts and regulate a number of other functions to enhance engine performance, reduce fuel consumption, curb emissions and lower maintenance costs. An advanced type of engine control designed to provide utmost fuel efficiency makes its debut this year with the introduction to airline service of the Boeing 757 jetliner (right).

Hamilton Standard's digital flight controls are used on a number of military helicopters and some advanced fixed-wing aircraft, such as the Northrop F-20 fighter shown below. These controls employ motion sensors, electrical connections and on-board computers to actuate control surfaces instead of the conventional complex of rods and linkages; they provide fully automatic flight control and exceptional stability to enhance aircraft performance and maneuverability.

In predicting the reliability of these and other electronic systems, Hamilton Standard makes use of a computer program known as CARSRA, supplied by NASA's Computer Software Management and Information Center (COSMIC). With CARSRA, engineers can study a proposed design for a control system and predict whether each of its redundant (backup) units will operate acceptably; if not, improvements can be made in the design. CARSRA was selected to provide increased flexibility over previous techniques. After determining that CARSRA was an accurate, flexible tool, Hamilton Standard used the best features of the COSMIC software to develop an advanced reliability modeling technique.

